

In the Claims:

1. (Currently Amended) A liner for a shaped charge comprising:

a mixture of powdered heavy metal and powdered metal binder wherein said powdered heavy metal comprises from ~~90~~ percent 92 percent by weight of said mixture to 97 percent by weight of said mixture, and wherein said powdered metal binder comprises from ~~10~~ percent 8 percent by weight of said mixture to 3 percent by weight of said mixture, said mixture compressively formed into a liner body shape.

2. (Previously Amended) The liner for a shaped charge of claim 1 further comprising a lubricant intermixed with said heavy metal and said powdered metal binder.

3. (Original) The liner for a shaped charge of claim 2, wherein said lubricant comprises powdered graphite.

4. (Original) The liner for a shaped charge of claim 2, wherein said lubricant comprises oil.

5. (Original) The liner for a shaped charge of claim 1 wherein said powdered metal binder is copper.

6. (Original) The liner for a shaped charge of claim 1 wherein said powdered heavy metal is tungsten.

7. (Original) The liner for a shaped charge of claim 1 wherein said powdered metal binder is selected from the group consisting of bismuth, zinc, tin, uranium, silver, gold, antimony, cobalt, zinc alloys, tin alloys, nickel, and palladium.

8. (Original) The liner for a shaped charge of claim 1, wherein said liner body shape is selected from the group consisting of conical, bi-conical, tulip, hemispherical, circumferential, linear, and trumpet.

9. (Currently Amended) A shaped charge comprising:

a housing;

a quantity of explosive inserted into said housing; and

a liner inserted into said housing so that said quantity of explosive is positioned between said liner and said housing, said liner formed from a mixture of powdered heavy metal and powdered metal binder, wherein said powdered heavy metal comprises from ~~96~~ percent 92 percent by weight of said mixture to 97 percent by weight of said mixture, and wherein said powdered metal binder comprises from ~~10 percent~~ 8 percent by weight of said mixture to 3 percent by weight of said mixture, said mixture compressively formed into a liner body shape.

10. (Previously Amended) The liner for a shaped charge of claim 9 further comprising a lubricant intermixed with said heavy metal and said powdered metal binder.

11. (Original) The liner for a shaped charge of claim 10, wherein said lubricant comprises powdered graphite.

12. (Original) The liner for a shaped charge of claim 10, wherein said lubricant comprises oil.

13. (Original) The liner for a shaped charge of claim 9 wherein said powdered heavy metal is tungsten.

14. (Original) The liner for a shaped charge of claim 9 wherein said powdered metal binder is copper.

15. (Original) The shaped charge of claim 9 further comprising a booster explosive disposed in said housing and in contact with said quantity of explosive, said booster explosive for transferring a detonating signal from a detonating cord in contact with the exterior of said housing to said high explosive.

16. (Original) The liner for a shaped charge of claim 9, wherein said liner body shape is selected from the group consisting of conical, bi-conical, tulip, hemispherical, circumferential, linear, and trumpet.

17. (Original) The shaped charge of claim 9 wherein said quantity of explosive comprises RDX.

18. (Original) The shaped charge of claim 9 wherein said quantity of explosive comprises HMX.

19. (Original) The shaped charge of claim 9 wherein said quantity of explosive comprises HNS.

20. (Original) The shaped charge of claim 9 wherein said quantity of explosive comprises HNIW.

21. (Original) A shaped charge of claim 9 wherein said quantity of explosive comprises TNAZ.

22. (Original) The shaped charge of claim 9 wherein said quantity of explosive comprises PYX.

23. (Currently Amended) A liner for a shaped charge comprising:

a mixture of powdered tungsten and powdered metal binder including approximately ~~50 to 90 percent~~ 92 to 99 percent by weight of the tungsten and approximately ~~10 to 50 percent~~ 8 to 1 percent by weight of the binder, the binder including lead and a metal selected from the group comprising tantalum, molybdenum and combinations thereof, the mixture compressively formed into a substantially conically shaped rigid body.

24. (Previously Presented) The liner as recited in claim 23 further comprising powdered graphite intermixed with said tungsten and said powdered metal binder to act as a lubricant.

25. (Previously Presented) The liner as recited in claim 23 further comprising oil intermixed with said tungsten and said powdered metal binder to decrease oxidation.

26. - 28. (Cancelled)

29. (Currently Amended) A liner for a shaped charge comprising:

a mixture of powdered tungsten and powdered metal binder including approximately ~~70 to 99 percent~~ 92 to 99 percent by weight of the tungsten and approximately ~~1 to 30 percent~~ 8 to 1 percent by weight of the binder, the binder comprising lead and tantalum, the mixture compressively formed into a substantially conically shaped rigid body.

30. (Previously Presented) The liner as recited in claim 29 further comprising powdered graphite intermixed with said tungsten and said powdered metal binder to act as a lubricant.

31. (Previously Presented) The liner as recited in claim 29 further comprising oil intermixed with said tungsten and said powdered metal binder to decrease oxidation.

32. (Previously Presented) The liner as recited in claim 29 wherein the binder further comprises copper.

33. (Previously Presented) The liner as recited in claim 29 wherein the binder further comprises molybdenum.

34. (Previously Presented) The liner as recited in claim 29 wherein the binder further comprises copper and molybdenum.



35. (Currently Amended) A liner for a shaped charge comprising:

a mixture of powdered tungsten and powdered metal binder including approximately ~~70 to 99 percent~~ 92 to 99 percent by weight of the tungsten and approximately ~~1 to 30 percent~~ 8 to 1 percent by weight of the binder, the binder comprising lead and molybdenum, the mixture compressively formed into a substantially conically shaped rigid body.

36. (Previously Presented) The liner as recited in claim 35 further comprising powdered graphite intermixed with said tungsten and said powdered metal binder to act as a lubricant.

37. (Previously Presented) The liner as recited in claim 35 further comprising oil intermixed with said tungsten and said powdered metal binder to decrease oxidation.

38. (Previously Presented) The liner as recited in claim 35 wherein the binder further comprises copper.

39. (Currently Amended) A shaped charge comprising:

a housing;

a quantity of high explosive inserted into said housing; and

a liner inserted into said housing so that said high explosive is positioned between said liner and said housing, said liner compressively formed from a mixture of powdered tungsten and powdered metal binder, the mixture including approximately ~~50 to 90~~ percent 92 to 99 percent by weight of the tungsten and approximately ~~10 to 50~~ percent 8 to 1 percent by weight of the binder, the binder including lead and a metal selected from the group comprising tantalum, molybdenum and combinations thereof, the mixture compressively formed into a substantially conically shaped rigid body.

40. (Previously Presented) The shaped charge as recited in claim 39 further comprising powdered graphite intermixed with said tungsten and said powdered metal binder to act as a lubricant.

41. (Previously Presented) The shaped charge as recited in claim 39 further comprising oil intermixed with said tungsten and said powdered metal binder to decrease oxidation.

42. - 44. (Cancelled)

45. (Currently Amended) A shaped charge comprising:

a housing;

a quantity of high explosive inserted into said housing; and

a liner inserted into said housing so that said high explosive is positioned between said liner and said housing, said liner compressively formed from a mixture of powdered tungsten and powdered metal binder, the mixture including approximately ~~70 to 99~~ percent 92 to 99 percent by weight of the tungsten and approximately ~~1 to 30 percent~~ 8 to 1 percent by weight of the binder, the binder comprising lead and tantalum, the mixture compressively formed into a substantially conically shaped rigid body.

46. (Previously Presented) The shaped charge as recited in claim 45 further comprising powdered graphite intermixed with said tungsten and said powdered metal binder to act as a lubricant.

47. (Previously Presented) The shaped charge as recited in claim 45 further comprising oil intermixed with said tungsten and said powdered metal binder to decrease oxidation.

48. (Previously Presented) The shaped charge as recited in claim 45 wherein the binder further comprises copper.

49. (Previously Presented) The shaped charge as recited in claim 45 wherein the binder further comprises molybdenum.

50. (Previously Presented) The shaped charge as recited in claim 45 wherein the binder further comprises copper and molybdenum.

51. (Currently Amended) A shaped charge comprising:  
a housing;  
a quantity of high explosive inserted into said housing; and  
a liner inserted into said housing so that said high explosive is positioned between said liner and said housing, said liner compressively formed from a mixture of powdered tungsten and powdered metal binder including approximately ~~70 to 99 percent~~ 92 to 99 percent by weight of the tungsten and approximately ~~1 to 30 percent~~ 8 to 1 percent by weight of the binder, the binder comprising lead and molybdenum, the mixture compressively formed into a substantially conically shaped rigid body.

52. (Previously Presented) The shaped charge as recited in claim 51 further comprising powdered graphite intermixed with said tungsten and said powdered metal binder to act as a lubricant.

53. (Previously Presented) The shaped charge as recited in claim 51 further comprising oil intermixed with said tungsten and said powdered metal binder to decrease oxidation.

54. (Previously Presented) The shaped charge as recited in claim 51 wherein the binder further comprises copper.

55. (New) A liner for a shaped charge comprising:

a mixture of powdered tungsten and powdered tantalum including approximately 92 to 99 percent by weight of the tungsten and approximately 8 to 1 percent by weight of the tantalum, the mixture compressively formed into a substantially conically shaped rigid body.

56. (New) The liner as recited in claim 55 further comprising powdered graphite intermixed with said tungsten and said powdered tantalum to act as a lubricant.

57. (New) The liner as recited in claim 55 further comprising oil intermixed with said tungsten and said powdered tantalum to decrease oxidation.

58. (New) A shaped charge comprising:  
a housing;  
a quantity of high explosive inserted into said housing; and  
a liner inserted into said housing so that said high explosive is positioned between said liner and said housing, said liner compressively formed from a mixture of powdered tungsten and powdered tantalum, the mixture including approximately 92 to 99 percent by weight of the tungsten and approximately 8 to 1 percent by weight of the tantalum, the mixture compressively formed into a substantially conically shaped rigid body.

59. (New) The shaped charge as recited in claim 58 further comprising powdered graphite intermixed with said tungsten and said powdered tantalum to act as a lubricant.

60. (New) The shaped charge as recited in claim 58 further comprising oil intermixed with said tungsten and said powdered tantalum to decrease oxidation.